## P5

### Autologous matrix-induced chondrogenesis (AMIC) - a 2-year follow-up

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**Purpose:** Autologous matrix-induced chondrogenesis (AMIC®) is a new treatment option for full-thickness cartilage defect repair (Outerbridge III to IV). It combines the well-known microfracturing technique (proposed by Steadman) with a porcine collagen type I/III matrix implant.
**Methods and Materials:** A retrospective study has been carried out to investigate the objective and subjective clinical outcome of this procedure over a period of up to 2 years post-operatively. 29 patients (15 female, 14 male, mean age 37 +/- 9 y) with focal chondral defects of the knee joint (13 retropatellar, 15 femoral condyle, 1 trochlea) were treated with AMIC. The average defect size was 3cm² +/- 2.6. The matrix was glued with partially autologous fibrin sealant to the subchondral bone. All patients were followed-up clinically with MRI, the IKDC Score, Cincinnati Score (CS) and Lysholm Knee Score (LKS). 21 patients were included into the 2-years evaluation.
**Results:** All scores showed a mean improvement at 1 and 2 years post-op. The IKDC increased from 27% to 54% in 1 year and 67% at 2 years. The CS improved from 36% pre-op to 66% (1 year) and 76% at 2 years, and also the LKS increased from 36% to 70% in 1 year and 79% at 2 years.
**Conclusions:** These results indicate that AMIC® is a promising alternative in the treatment of local cartilage defects in the knee with good short and mid-term results. Further follow up will reveal, if the good results are durable and AMIC®, as matrix enhanced microfracturing technique can become a valuable, recognized cartilage repair technique.

## P6

### Clinical implication of mechanotransduction after matrix-associated autologous chondrocyte implantation (MACT). Does intermittent compression accelerate the healing process?

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**Purpose:** Rehabilitation after MACT includes long periods of non weightbearing in order to protect the graft. Concerning the biochemical and biomechanical properties of healthy cartilage unloading seems to be controversial. In vitro investigations of the graft show: cyclic loading and intermittent compression stimulate extracellular matrix synthesis whereas unloading and static compression decrease proteoglycan and collagen synthesis. We performed a prospective, randomized, controlled study which analyzes the influence of physical compression at the graft by performing a compression treatment.
**Methods and Materials:** In this study 18 patients (5 females, 14 males, aged between 22-56 years) with traumatic lesions of the cartilage of the femoral condyle (mean defect size:5,1 cm2) were treated with MACT and were divided into two groups. Group A underwent our standard rehabilitation protocol. Group B performed the same rehabilitation protocol combined with the compression treatment. Evaluation was performed after 4,12, 24 and 52 weeks by objective and subjective evaluation scores (ICRS)
**Results:** Group A was able to full weightbearing after 6,5 weeks, group B after 5,6 weeks. Return to work was possible after 8,9 weeks in group A, after 7,9 week in group B. Group B had significant lower pain compared to group B (VAS). The subjective scoring in the KOOS showed significant higher levels in group B.
**Conclusions:** Added compression on the graft in vivo seems to support the healing process of the graft by promoting the biochemical and biomechanical properties of healthy cartilage. Traditional rehabilitation protocols with long periods of non weightbearing should be reconsidered according to the properties of cartilage.

## P7

### Partial weight bearing ability following autologous chondrocyte implantation.

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**Purpose:** Partial weight bearing (PWB) following autologous chondrocyte implantation (ACI) is generally encouraged in order to provide protection and progressive stimulation of cells. We investigated the ability of patients to replicate and retain PWB restrictions following practice using bathroom scales.
**Methods and Materials:** Static and dynamic weight bearing ability was assessed in 48 patients using a force platform, both immediately, and seven days after instruction and practice using a set of scales, throughout a progressive PWB rehabilitation programme.
**Results:** Patients exerted a mean of 15.8% body weight (BW) more than expected during gait for 20% PWB trials, 8.3% more for the 40% trials, 11.9% BW more for the 60% trials, and were 1.2% BW under the prescribed 80% trials. Replication of PWB during gait improved following feedback in a seven-day retention test, whereby means of 6.6% (9.2% BW improvement), 4.2% (4.1% BW improvement), 9.9% (2.0% BW improvement) and 0.2% BW (1.0% BW improvement) more than expected were exerted by patients for the 20%, 40%, 60% and 80% PWB trials, respectively. A moderately high correlation (r=0.74) was observed between a patients' ability to replicate WB levels in both static and dynamic conditions.
**Conclusions:** Patients were unable to follow PWB restrictions following instruction and practice on a set of scales. The implication is that patients simply increase their weight bearing within the limits of discomfort despite education to the contrary. The inability to effectively train patients in weight bearing activity has implications for ACI and other surgical procedures where PWB is a part of the rehabilitation.

## P8

### Rehabilitation following tibial tubercle osteotomy

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**Purpose:** Tibial tubercule transfer osteotomy is indicated for the treatment of patellar malalignment, especially in cases with concomitant cartilage defects. The aim of this work was to evaluate the results of our rehabilitation program of patients following tibial tubercle osteotomy with lateral release and medial retinaculum reconstruction.
**Methods and Materials:** We evaluated 20 patients with mean age of 29 years. Patients were operated with Fulkerson or Elmslie-Trillat osteotomies with lateral release and medial retinaculum reconstruction. Mean follow-up time was 8 months. All patients underwent the same rehabilitation program, divided into two stages. This program has been specifically designed to start enough before the surgery, to achieve full extension, strengthening of quadriceps muscle and proprioception with care of pain control. The postoperative rehabilitation continued with the same goals. The physiotherapy program, weight bearing and exercises, were adapted to the patient's condition. Eight months postoperatively patients were evaluated with modified Lysholm score, analogue pain score and patient's subjective assessment.
**Results:** All of these patients returned to the pre-injury activity. In Lysholm score very good results observed in 10 patients (50%), good in 3 patients (15%), poor in 4 patients (20%) bad in 3 patients (15). All patients significantly improved in pain score and were satisfied with the results.
**Conclusions:** In our opinion, good clinical and subjective results allowing patients to return to normal daily life activity without pain validate this rehabilitation program.